

Objective 20

Determine solutions to a 1-variable inequality

Example 1:

PROBLEM

List three numbers that satisfy the inequality $\frac{x}{6} \leq -3$.

STEP 1

Multiply both sides of the inequality by 6 so that x will be by itself on the left side.

$$\begin{aligned}\frac{x}{6} &\leq -3 \\ 6 \cdot \frac{x}{6} &\leq -3 \cdot 6 \\ x &\leq -18\end{aligned}$$

STEP 2

Write three numbers that are less than or equal to -18.

-18, -20, -39

STEP 3

Substitute each number from Step 2 into $\frac{x}{6} \leq -3$ to check that the number satisfies the original inequality.

$$\begin{array}{ccc}\frac{x}{6} \leq -3 & \frac{x}{6} \leq -3 & \frac{x}{6} \leq -3 \\ \frac{-18}{6} \stackrel{?}{\leq} -3 & \frac{-20}{6} \stackrel{?}{\leq} -3 & \frac{-39}{6} \stackrel{?}{\leq} -3 \\ -3 \leq -3 & -3\frac{1}{3} \leq -3 & -6\frac{1}{2} \leq -3\end{array}$$

All three numbers satisfy the inequality.

ANSWER

-18, -20, -39, or any other set of three numbers that are less than or equal to -18 .

Guided Practice:

List 3 numbers for each equation to satisfy each inequality

$$x-5 > 17$$

$$7x \leq 49$$

$$x+8 \geq 24$$

Independent Practice: List 3 numbers for each equation to satisfy each inequality. *Show your work!*

1. $5x > 25$

5. $\frac{x}{4} < 5$

2. $\frac{x}{2} \leq 9$

6. $3x > 6$

3. $x-3 \geq 2$

7. $x-4 \geq 12$

4. $x+9 < 28$

8. $\frac{x}{5} \geq 2$

Additional Help:

<http://www.purplemath.com/modules/ineqsolv.htm>